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VAX Strengths Grow With VAX/VMS V.2 Product Set

There are now over 1000 VAX systems in production use at customer sites worldwide, yet the groundswell to VAX is still rising. The key to VAX/VMS V.2 and the new and enhanced optional software announced with it is the way they augment the strengths that have made VAX so successful.

Languages are a good example. Not only are BASIC, COBOL, FORTRAN, PASCAL, BLISS-32, CORAL-66, and MACRO all available on VAX, but each now takes full advantage of the powerful VAX 32-bit architecture during execution.

All the languages share in another major VAX strength, a common language environment. Each language interfaces to the VAX Symbolic Debugger and supports use of the symbolic traceback facility and common run-time library.

Each conforms to the VAX calling standard and can call any other VAX language, any of the VAX/VMS system services, and the SORT and FMS subroutines. All the VAX languages handle exceptions in a common manner and use VAX-11 RMS (Record Management Services) for record handling.

An obvious benefit is that VAX users can develop multi-language applications, using the best language for a specific function. Or, programmers of different expertise can develop modular applications in different languages.

VAX has always been easy to use, but with the VAX/VMS V.2 product set, that advantage is even more pronounced. Programmers now have even more features to use:

- New wild card specifiers provide

flexible specification of file parameters for most DCL commands.

- Extensive program development and maintenance facilities including the new VAX-11 FMS forms capability, editors such as the new version of EDT, and a faster librarian, join with the VAX Symbolic Debugger and linker to help programmers develop applications quickly.
- DATATRIEVE, newly enhanced, allows programmers to do quick and easy inquiries to a data file or files, or to produce one-time reports for special purposes.
- The new VAX-11 computer-assisted instruction courses for EDT and the BASIC PRIMER course help new users learn EDT and BASIC on-line. The VAX/VMS PRIMER orients users to the key features of the entire system without a need to go through the whole of the documentation set.

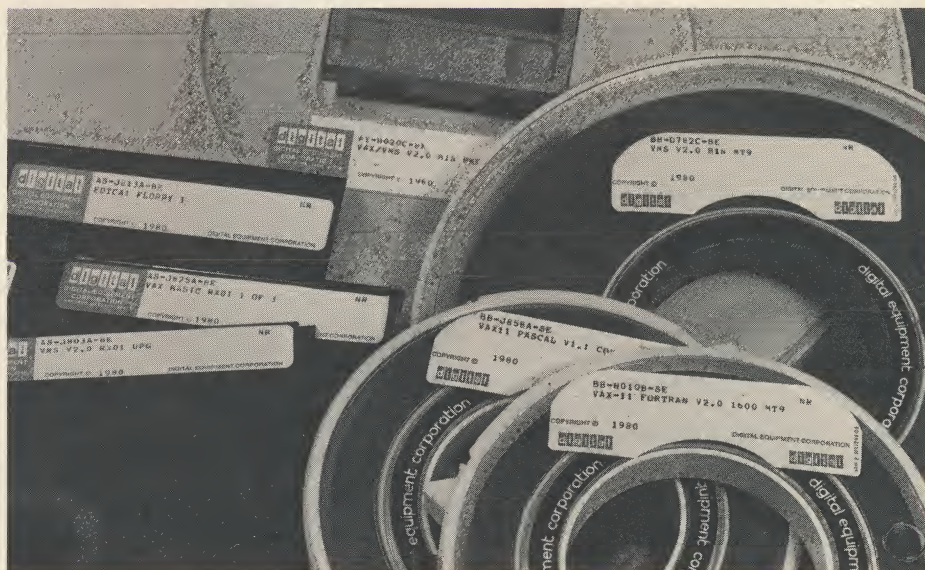
Plus:

- HELP facilities throughout the system and its utilities that lessen the need to refer to documentation.
- One command language that serves both batch and interactive applications.
- Structured programming facilities, and automatic detailed error reporting from internal consistency checks that add to high programmer productivity on VAX.
- Logical names that allow development of device and network-independent applications without special programming.
- The large VAX address space, which means that programmers do not ever need overlays to write very large programs.

System managers also gain new tools with VAX/VMS V.2:

- New and enhanced utilities in VAX/VMS V.2 allow more effective

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VAX Strengths Grow With VAX/VMS V.2 Product Set (Continued)

file management and easy updating to the new release of the operating system.

- VAX/VMS provides additional facilities to control disk utilization and other system resources for time-sharing, real-time, and data processing workloads.

Plus:

- VAX/VMS is self-configuring. There is really no SYSGEN in the traditional sense. Nor is there any NETGEN for DECnet. Yet VAX users have the option of setting parameters to optimize application throughput.

VAX combines interactive data processing capability with powerful computational and real-time performance. Many of the new products focus on this aspect of VAX.

- Not only does VAX now support a wide range of languages, in particular it now provides a powerful new industry-standard COBOL and an enhanced, high-productivity BASIC.
- VAX-11 FMS, the new forms processor, facilitates development of forms-oriented applications, whether in data processing, parameter entry, or screen output formatting.
- There's an extensive set of utilities for program development and production work, including a very fast SORT; editors (including an improved EDT with keypad facility); VAX Symbolic Debugger; a faster librarian; and the enhanced DATATRIEVE.

Plus:

- VAX has always supported batch processing concurrently with inter-

active processing, including program development.

- Extensive interconnect software links VAX systems to other Digital processors (DECnet), IBM systems (VAX-11 2780/3780), or Control Data Corporation systems (MUX/200 VAX).
- Sophisticated VAX-11 RMS features include full indexed sequential processing, file sharing with record locking for multiple application access to files, and multi-volume disk support for handling large data files.

Real-time capability is an integral part of the VAX-11 architecture and of the VAX/VMS operating system.

VAX/VMS V.2 adds new real-time capabilities and further simplifies the process of developing real-time applications on VAX.

- VAX/VMS V.2 allows applications in user mode to interface directly to customer-specific devices without need for a user-written device driver.
- *The VAX/VMS Real-Time Users Guide* documents system services and programming technique pertinent to real-time applications on VAX.
- It is now possible to add user-written system services.
- The new DR780 high performance interface allows high-speed real-time devices to transfer data directly to a VAX system's memory

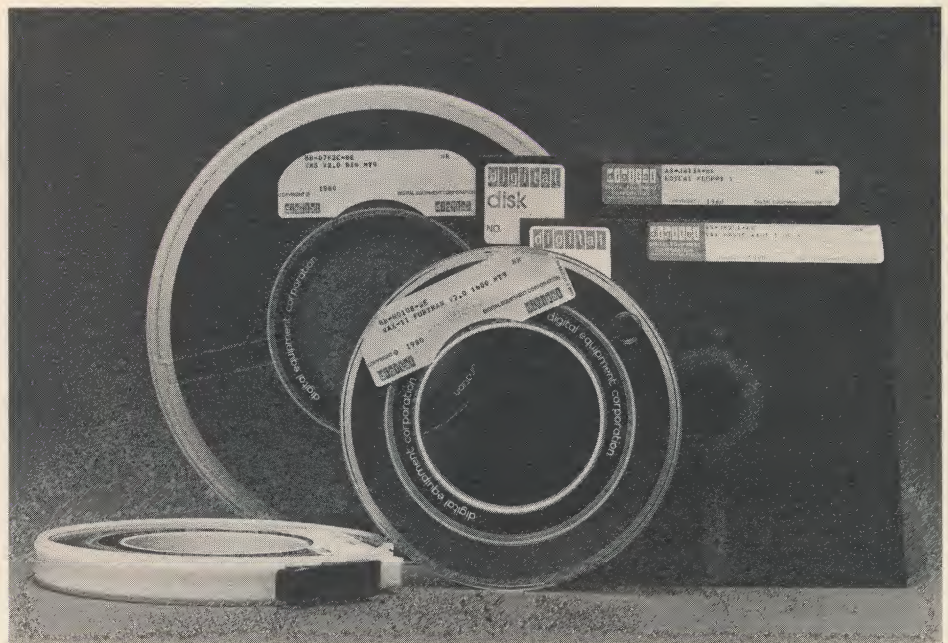
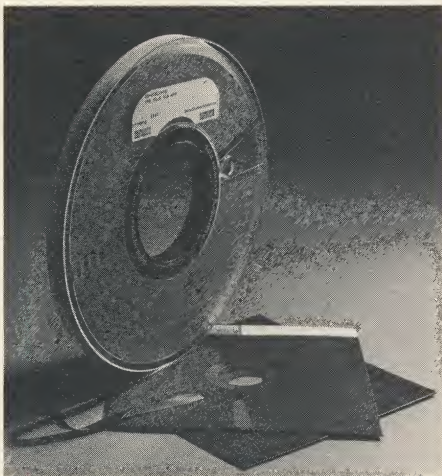
without special I/O programming.

- The MA780 multiport memory, supported with this operating system release, may be used to share data between VAX processors, which can communicate through it at high speed. The support is designed in such a way that applications may run on a single system or on multiple systems without reprogramming.

Plus:

- The VAX/VMS pre-emptive priority, event-driven scheduler and the operating system's ability to lock pages and processes into physical memory combine to ensure controlled, real-time performance.
- The remote diagnosis feature of VAX processors enhances availability of the systems for critical real-time processing. Remote diagnosis, available in most locations, enables an experienced Digital diagnostic team to begin working with the system minutes after the user calls for assistance.
- Extensive documentation adds to the ease of writing drivers and diagnostics for VAX; the ability to add drivers on-line also facilitates quick real-time application development.

In the case of real-time processing, as in the other aspects of VAX, new capabilities strengthen a product which has already proven to be a tremendous success.



VAX-11 COBOL Far Outperforms Previous Version

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VAX-11 COBOL is one of the highest performance COBOL compilers in the industry today. Early benchmarks indicate performance many times higher than the previous VAX-11 COBOL-74, and far exceeding other minicomputer COBOL products.

Based on the ANSI-74 standard, VAX-11 COBOL also incorporates many new features and interpretations planned for the next ANSI standard.

Powerful new features include support for:

- Structured programming
- Reference modification
- Symbolic characters for graphic applications
- Improved table handling
- Data types, providing full support for compatibility with both IBM and other COBOL implementations
 - Left/right overpunch
 - Leading/trailing separate sign
 - Computational (1, 2, and 4 word binary)
 - COMP-1, COMP-2 (Single/double precision floating point)
 - COMP-3 (packed decimal)

The additional features found in VAX-11 COBOL offer increased power and function over VAX-11 COBOL-74. As an example, the implementation of the full ANSI Level 2 SORT/MERGE module allows the user to sort and/or merge files without coding calls to the VAX-11 SORT utility. The user can, instead, issue sort or merge statements at the source language level.

COBOL users will find the SORT/MERGE facility, packed decimal support, and EBCDIC collating sequence result in greater compatibility with IBM COBOL implementations. For existing Digital COBOL users, a source program translator from PDP-11 COBOL and VAX-11 COBOL-74 to VAX-11 COBOL V1.0 eases movement of programs. The reformat utility provides source program format conversion from ANSI standard format to Digital terminal format and vice versa.

In terms of the existing 1974 ANSI standard, VAX-11 COBOL provides full support for the following standard COBOL modules;

- Nucleus
- Table handling
- Sequential I/O
- Relative I/O
- Indexed I/O
- Segmentation/
- SORT/MERGE
- Library
- Interprogram Communication

...From One COBOL User...

"We are impressed with how much faster we can compile with the new COBOL. Our productivity is increased." This customer is writing a new order processing application in VAX-11 COBOL and developing an integrated financial system for his large company.

"For those people who liked the old COBOL, the new COBOL is even better. We have had no problem converting from one to the other. VAX-11 COBOL is totally compatible with VAX-11 COBOL-74. It generates smaller object code, and in general is a superior product."

...And Another...

"For program development, VAX-11

COBOL beats all other manufacturers' COBOL hands down." VAX-11 COBOL offers this and more, according to Eric Frey, president of Frey Associates, a large systems OEM in Amherst, N.H.

"We are using the new COBOL for large financial transaction processing systems in a banking environment... developing programs for several major New York banks.

"For the first time, we can run large programs and use the capabilities of a large machine with the highest degree of input/output overlap. VAX-11 COBOL has better buffering, better control over buffering, and better processing overlap. That makes us very happy.

"We installed VAX-11 COBOL in 10 minutes. It is easy to use, and has good diagnostics. The compiler throughput is impressive, as are the performance numbers. This is the first time we've been able to have over 20 programmers developing and testing large programs simultaneously with such great response time. We are quite pleased."

VAX-11 FORTRAN Adds FORTRAN-77 Features, Improves Compilation Speed

Digital's FORTRAN compiler for VAX has a new name to match its significant new features. Since VAX-11 FORTRAN Version 2.0 (formerly called VAX-11 FORTRAN IV-PLUS) now takes full advantage of the new VAX architecture, users of the previous version will see a dramatic increase in compilation speed (an average improvement by a factor of 2) as well as the ability to compile much larger programs.

There is more that's notable about this new compiler. VAX-11 FORTRAN is an implementation of "FORTRAN-77". That is, it conforms at the full language level to the latest ANSI FORTRAN standard, X3.9-1978.

Since the new ANSI standard has several differences with the previous standard, VAX-11 FORTRAN provides optional support for programs written in conformance with the older 1966 standard. This facility greatly eases

transporting of programs written for older compilers, both on PDP-11 systems and on other vendors' equipment.

Beyond conforming to the full FORTRAN-77 standard, VAX-11 FORTRAN provides a number of extensions beyond it. These include:

- Language elements for keyed and sequential access to VAX-11 RMS multi-key Indexed files.
- A set of data types beyond those specified for full-language FORTRAN-77:
 - LOGICAL*1, BYTE
 - LOGICAL*2
 - INTEGER*2
 - COMPLEX*16, DOUBLE COMPLEX
- Explicit specification of storage allocation units for data types. (e.g., REAL*8, INTEGER*4)

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- Data initialization in type declaration statements
- DO WHILE, ENDO statements
- Bit manipulation functions
- Hexadecimal and octal constants and Z and O format edit descriptors applicable to all data types
- ENCODE, DECODE statements
- ACCEPT, TYPE input/output statements
- DEFINE FILE statement
- USEROPEN subroutine invocation at file OPEN time
- INCLUDE statement
- 31-character identifiers which may include dollar sign (\$) and underline (—)
- Comments allowed at end of each source line
- Debug statements in source

Note in particular that VAX-11 FORTRAN V2.0 provides language elements that allow access to VAX-11 RMS multi-key indexed files. This powerful facility alone allows FORTRAN to be used in applications not normally associated with the language. Now, through extended FORTRAN language syntax, randomly addressable RMS Indexed files can be accessed, modified, and maintained through the use of logical key values that identify individual records.

The reentrant VAX-11 FORTRAN compiler continues to take advantage of the VAX-11 floating point and character string instruction sets and the VAX/VMS virtual memory operating system. It further provides:

- Support for calls to VAX/VMS system service procedures
- Generation of symbol tables for the VAX-11 Symbolic Debugger
- Generation of shareable code
- Up to 255 actual arguments in a CALL statement
- Up to 250 named COMMON blocks per subprogram

Finally, VAX-11 FORTRAN is a highly optimizing compiler. The optimizations it performs include:

- Constant folding
- Optimizations of arithmetic IF, logical IF, and block IF-THEN-ELSE
- COMMON subexpression elimination

- Removal of invariant expressions from DO loops
- Allocation of general registers across DO loops

...One FORTRAN User's Experience...

The new features of VAX-11 FORTRAN make it "a much more viable language for doing system programming or system development," according to a computer center manager at a large university who has been using VAX-11 FORTRAN for several months.

"No one around here uses Assembler any more. It's much easier to find a system programmer who knows FORTRAN."

"The biggest gain for us," he says, "is that the new compiler is shareable."

When you have many people doing compiles, it leaves much more memory available for other things. Therefore more people can use it at once.

"There's a tremendous amount of new I/O syntax in the compiler. In particular, there's now support for manipulating ISAM files from FORTRAN. ISAM, of course, is ideal for commercial applications."

"Many more RMS features are available to FORTRAN, for example, syntax for submitting a file on CLOSE. There's also added FORTRAN syntax for the INQUIRE statement, which lets you find information about a file in a way that you could not before. And you can use a FORTRAN procedure to write a command that gets submitted to a batch queue."

Flying On FORTRAN

A VAX-11/780, programmed in FORTRAN, drives a new pilot training simulator, designed by CAE Electronics Ltd. of Montreal. The simulator, which duplicates a BOEING 727 cockpit, is the first of a series of new CAE aircraft flight simulators. It is currently in operation at the Trans World Airlines (TWA) training facility in Kansas City, Missouri.

A flight simulator permits novice and experienced pilots to safely practice emergency flight procedures such as loss of power from an engine, loss of landing gear, or the start of a fire. Simulators are also used to improve special skills, such as instrument navigation and night landings. Simulators are not only safe, they are considerably less expensive to operate than an equivalent aircraft.

This VAX-based simulator is unusual in that it is not programmed in assembly language, which has traditionally been the only language to use in duplicating the real-time sensation of flight. With its VAX/VMS operating system, large memory, and very high FORTRAN performance, a VAX system can deliver the necessary response even when programmed in a high-level language.

Both the developer and customers benefit. Since it is easier and faster to write programs in FORTRAN for

a specific simulation routine, and since there are more programmers with FORTRAN experience than with assembly language programming ability, using FORTRAN saves time and money in initial simulator development and subsequent updates.



VAX-11/780 is used to control instruments and motions of flight simulation.

VAX-11 BASIC: Speed on a Par with VAX-11 FORTRAN

An implementation language for even large and complex applications, VAX-11 BASIC offers a high productivity development environment coupled with an ability to execute user applications quickly and efficiently. VAX-11 BASIC is fast. Compilation and execution speeds are on a par with VAX-11 FORTRAN.

VAX-11 BASIC provides an editor for building and modifying programs, integrated program debugging facilities, and the ability to generate conventional object modules for subsequent linking. In addition, VAX-11 BASIC can generate code directly into memory, thereby allowing a main program to be immediately run along with any supporting, separately compiled BASIC subroutines.

VAX-11 BASIC also includes some RSTS/E BASIC-PLUS features to help make the transition from RSTS/E to VAX/VMS easier. A program resequencer, cross-referencing generator, and a BASIC capability analagous to VAX/VMS HELP make programs easier to write and use.

Other Features Include:

- File handling which provides access to the VAX-11 RMS file and record processing options, including multi-key ISAM.
- Long variable names which allows variable names up to 31 alphanumeric characters, greatly enhancing readability of programs.
- Dynamic string handling, which helps the programmer easily manipulate strings of alphanumeric characters.
- PRINT USING, which allows the programmer to create complex lists, tables, reports and forms.
- Source program libraries for writing modular, reliable and maintainable programs by eliminating duplication of source code through the APPEND command. A section of program text that is used by several program units, such as a COMMON block specification, can be created and maintained as a separate source file.
- The ability to call external subprograms and function through an external program CALL statement and an external function call inter-

facing the common language environment.

- Shareable-reentrant programs, which allow users to write subprograms and place them in shareable libraries for concurrent use for several applications and/or many on-line users.
- Common statements, which can be used to share data among subprograms in a program image.
- Debugging facilities including diagnostic messages and access to the VAX Symbolic Debugger Utility. This lets the programmer set breakpoints and trace points and examine or modify the contents of locations dynamically when executing the program.

...This BASIC User Says...

"The speed of VAX-11 BASIC is incredible," according to Dr. Jeff Jalbert, at Denison University in Granville, Ohio. "The compiler is incredibly fast. VAX-11 BASIC is approximately 35 to one faster than RSTS/E BASIC and five times faster than VAX/VMS compatibility-mode BASIC-PLUS-2. And we are no longer limited by program size."

At Denison, students are learning to program in VAX-11 BASIC, and the

faculty is using it to develop simulation models. VAX-11 BASIC is also being used for registration, alumni development, admissions, student records, payroll, and other administrative purposes.

"So far, we have taken hundreds of programs originally written for RSTS/E and converted them to VAX-11 BASIC. With it, we can get hold of all the functional elements embedded in VMS...all the system services...and then link right in to interface with other languages. VAX-11 BASIC exceeds our expectations..."

On-Line BASIC PRIMER Introduces VAX-11 BASIC

Digital has created a version of its original computer-managed course to run under the new VAX-11 BASIC. Called the BASIC PRIMER, this course covers the fundamentals of BASIC language programming for students with no previous experience with computers.

The BASIC PRIMER is self-paced and focuses on the needs of programmers in schools and universities and in industry.

CORAL and BLISS-32 Gain Enhancements

The new VAX-11 CORAL 66 compiler is based on the well-tried PDP-11 compiler, but produces code that takes full advantage of the VAX architecture, providing much higher performance.

CORAL 66 is a high level programming language derived from JOVIAL and ALGOL-60. In 1970, CORAL was established as the standard military real-time applications and systems implementation language by the British government. It has since been adopted by many companies for industrial process control, research, and commercial applications around the world.

VAX-11 CORAL-66 conforms fully to the British government's official definition for the language.

VAX-11 BLISS-32 V2.0 is an optimiz-

ing, high level system implementation language for the VAX family. BLISS contains many of the features of high-level languages (e.g. DO loops, IF-THEN-ELSE statements, automatic stack, and mechanisms for defining and calling routines). It also provides the flexibility and access to hardware that one would expect from an assembly language.

With the ease of a high level language and assembly language flexibility, BLISS can help programmers be more productive, shorten product development times and lower maintenance costs.

The newest version of VAX-11 BLISS-32 offers faster compilation, new Lexical and Builtin functions, and more optimizations, plus a new manual set.

VAX-11 PASCAL Proving Successful at Varied Applications

Recently added to the VAX languages set, VAX-11 PASCAL has already won favor in a variety of technical, industrial, and educational applications.

PASCAL is a high-level, block-structured language created by Niklaus Wirth in the late 1960s. His goal was to create a language that would be suitable for teaching programming in a systematic and concise manner, and at the same time provide for reliable and efficient implementation on today's computers.

Not only does PASCAL help in teaching programming, it also helps to cut down programming errors generally.

And fewer errors means less time to develop and debug applications. In some cases, PASCAL users are claiming 100% or greater increases in programming productivity over older languages.

Today PASCAL is being used in applications that were formerly coded in FORTRAN or assembly language.

Here are some examples:

- OEMs find that PASCAL is an excellent application implementation language that can greatly reduce their time to market over other languages—especially assembly language.
- Scientific/Engineering users find

that PASCAL can be used for large data reduction or "number crunching" applications. Large, complex programs are easier to understand and maintain in PASCAL than in other languages.

- Laboratory and industrial real-time users are finding that PASCAL has the potential for becoming a great real-time control language. Note that VAX-11 PASCAL has access to all the VAX/VMS system services through procedure references.
- Microcomputer users and manufacturers find PASCAL's efficiency and small size excellent for micro applications and systems.

DATATRIEVE Adds Many New Features

PDP-11 DATATRIEVE/VAX V2.0 is a significant enhancement of Digital's successful interactive query, report, and data maintenance system. DATATRIEVE provides users with direct, easy, and fast access to data.

DATATRIEVE accepts human-oriented commands and statements from the user and reacts by extracting, modifying, or updating the RMS data. After learning fewer than 10 commands, novice users can find, print, update, and sort records.

DATATRIEVE'S *query* component allows interactive data retrieval, sort, and update. Its *report generation* component produces summary and detailed reports, titles, headings, footnotes, group totals, and report totals.

The *data definition* module allows creation and maintenance of and access to a Data Dictionary in which record formats and file definitions are stored. The Data Dictionary can be shared by multiple users, and can be used to save frequently accessed command sequences.

DATATRIEVE notifies users of errors immediately for on-line correction and maintains file security. It offers a Data Dictionary facility, provides extensive control of report formats, eliminates the need for many special-

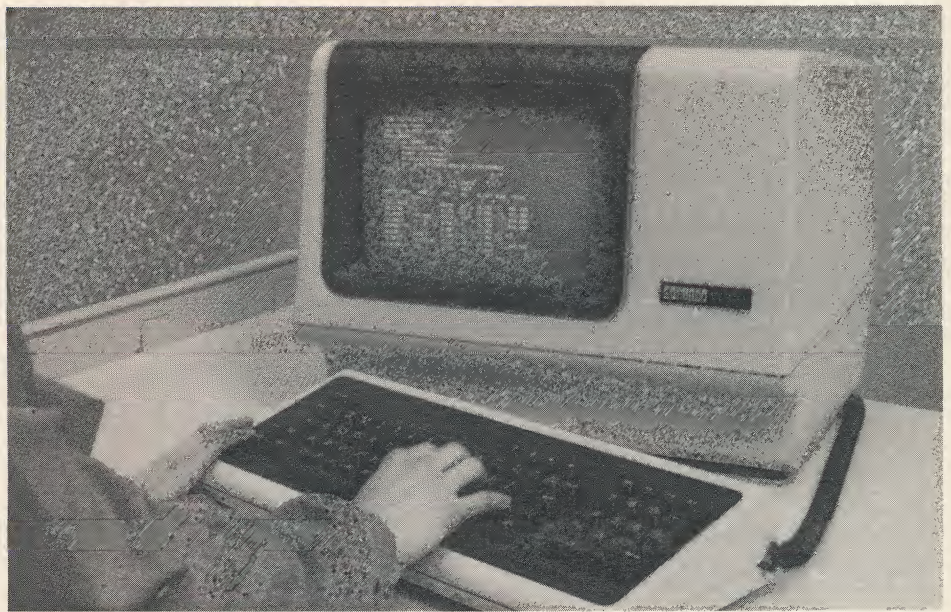
ized application programs, uses COBOL-like record definitions, offers extensive interactive HELP routines, and can store sets of commands for repeated use.

This new version of DATATRIEVE offers several significant enhancements, including full access to VAX-11 RMS file sharing capabilities. There is also now data input validation in record definitions and automatic reprompting during data entry. Also new are data encoding and decoding tables for data validation and

printing, variable length record support, support of arrays with single records (repeating groups), and multiple file domains (cross file lookups).

The new Application Design Tool (ADT) is an interactive utility with extensive help facilities. It aids in designing and defining record structures and domains. There are additional capability extensions for the sophisticated user.

For novices, a new Beginners Guide introduces DATATRIEVE through a set of examples.



VAX-11 FMS Simplifies Screen Handling

VAX-11 FMS, the forms management for VAX/VMS programming languages, is one of the most sophisticated screen-handling packages on the market today.

By serving as a general forms front end, FMS allows application programs to deal with logical constructs of forms and fields instead of characters, lines, and escape sequences or PRINT and FORMAT statements. It can significantly increase programmer productivity.

Yet VAX-11 FMS offers advantages to **everyone** connected with an application:

Application developers can use the VAX-11 FMS Form Editor to create and modify forms on the screen interactively. The Form Editor offers functions such as Cut/Paste, Delete/Undelete to help get the form designed just as the developer wants it. Code is then written in a standard language. Finally, when the application runs, VAX-11 FMS ensures that the data the program receives is clean and ready to process.

Application maintainers can cus-

tomize VAX-11 FMS forms for individual departments or customers. Changes can be made without relinking or recompiling because forms are independent of programs. Finally, application maintainers can store application parameters with the form for easy editing, instead of coding

them as program constants.

Application users enjoy instant data validation at the character and field level; HELP available for every field and every form; protected fields, default values, "must enter," and many more field attributes; scrolling; and the power of VT100 terminals.

DR780 Interface Transfers Data to and from Memory at 6.67 Mb/Sec.

A new, very high performance interface allows VAX users to connect devices directly to the VAX-11/780's internal memory bus. Called the DR780, this interface can transfer data to and from a VAX system's memory at up to 6.67 million bytes per second, making it the fastest and most flexible general purpose interface in the minicomputer marketplace.

The DR780 is an intelligent, 32-bit parallel interface that can also be

connected to another DR780 on a second VAX-11/780 system. It will be available for delivery beginning in September 1980, and is fully supported under VAX/VMS with a simple, easy-to-use I/O driver and a high-level language library of support routines. The DR780 is extensively documented in the new version of the *VAX/VMS I/O Users Guide*, part of the documentation set for VAX/VMS V.2.

New Tape and Disk Drives Join VAX Option List

Three of Digital's smaller mass storage peripherals are now available on VAX. They provide additional flexibility, especially in data interchange with other systems.

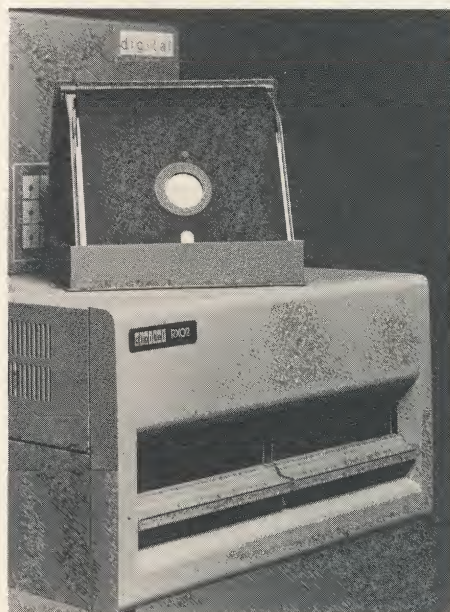
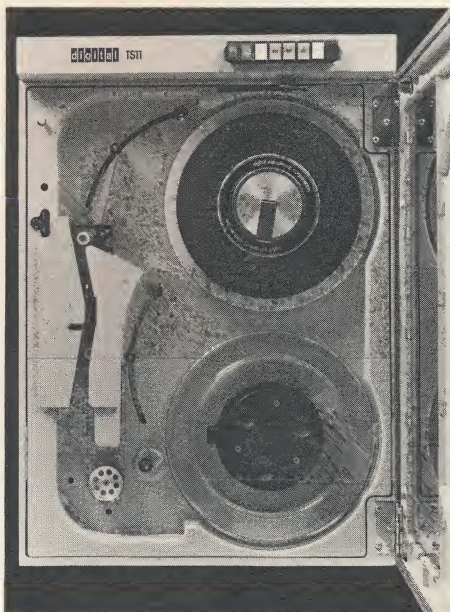
TS11—The TS11 is a low cost medium-performance 9-track magnetic tape storage system. It provides reasonable tape backup for RK07 disk systems on VAX. The TS11 can also serve as an add-on for tape interchange with other systems.

RL02—The RL02 is Digital's principal low cost, small-to-medium capacity cartridge disk drive, offering 10.4 megabytes of storage per drive. The RL02 is not supported as a systems disk for VAX, but offers a means of transporting data to and from other Digital systems.

RX02—The RX02 is a low-cost flexible diskette drive. For VAX users, it provides an inexpensive means of interchange with Digital's MINC

Laboratory Data Processing system, and other smaller systems that use flexible disk storage.

The RX02 floppy also makes ideal carry-away storage for programmers or students.



STI Offers Process Accounting Software for VAX

PACS (Process Accounting and Chargeback System) is a comprehensive computer service management system that meets in-house, commercial, and government job cost reporting requirements, according to the vendor, Signal Technology Inc. (STI).

PACS generates informative monthly bills, supports automatic data entry into a general accounting system, and gives systems personnel the information they need to manage computer operations more efficiently, the vendor notes.

It provides financial staffs with detailed monthly cost and income sum-

maries, informs the user of his month-to-date charges, reports missing data or errors for early correction, and organizes historical data for evaluation or archival. PACS is written in FORTRAN and is fully documented.

The ILS (Interactive Laboratory System), also from STI and also written in FORTRAN, is application software for interactive signal processing. ILS commands provide digital filtering, signal modeling (parameter estimation), and spectral analysis, plus statistical analysis, pattern recognition, and extensive graphics operations. Comprehensive documentation is provided.

Another software package, called DACS, interfaces the VAX system ILS to Digital's dual-microprocessor LPA-11K direct memory access controller.

For more information, on STI's PACS, ILS, and DACS, for the VAX contact: Signal Technology, Inc.
15 West De La Guerra
Santa Barbara, Calif. 93101

Since the products described above are those of other companies, and since Digital has not analyzed, reviewed, or checked the quality of the products in any way, Digital is not responsible for their performance or maintenance.

DECnet-VAX Now Enables Network Command Terminals

The DECnet-VAX option enables VAX systems to participate in a network with other VAX systems, PDP-11s, or DECSYSTEM-20s. The newest release of DECnet-VAX enables VAX-to-VAX network command terminal capabilities.

VAX systems are currently in Phase II of DECnet capability. Phase III will support routing, remote indexed file access, additional network management tools, and multipoint links.

Digital's Internet software allows VAX systems to communicate directly with IBM and Control Data Corporation systems.

VAX/VMS V.2 Supports MA780 Multiport Memory

The MA780 multiport memory option consists of from 256Kb to 2 megabytes of MOS semiconductor memory with error correction code. As many as four VAX-11/780s can access one MA780 memory, and two MA780s can be accessed by one VAX-11/780.

Interprocessor communication is provided by sharing of data regions, VAX/VMS mailboxes, and/or common event flags. Applications can execute in either single or multi-computer environments without any program modification.

VAX/VMS V.2 Utilities Show Performance Gains

EDT—The Digital Standard Editor

EDT is Digital's most popular interactive editor. It has been rewritten to take full advantage of the VAX architecture, resulting in a sharp gain in its line by line editing performance. EDT allows:

- Screen and keypad editing on the VT100 and VT52 video terminals (EDT supports all Digital's hard-copy terminals as well.)
- Simultaneous editing of multiple files using multiple buffers created by the user.
- Editing procedures, called macros, written by the user and called when the editing session begins.

EDT accepts multiple commands per line and is shareable among many users on timesharing systems. An easy to use HELP facility is available to guide unsophisticated users.

VAX-11 SORT

The VAX-11 SORT utility allows the user to reorder data for any RMS input file. The MERGE facility of SORT, currently in field test, is a callable stand-alone subroutine that allows the merging of files whether sorted recently or some time earlier. The format of the output file depends on key fields within the input data records. The sorting sequence is determined by user-specified control fields, also known as key fields,

within the data itself.

If the user does not wish to reorder the data base, SORT can be used to extract key information, sort that information, and store the sorted information as a permanent file. Later that file can be used to access the data base in the order of the key information in the sorted file. The contents of the sorted file may be entire records, key fields, or record file addresses which point to the position of each record within the file.

LIBRARIAN

The VAX/VMS Librarian utility helps programmers create and maintain library files. These comprise object, MACRO, HELP, or text modules which may prove helpful to other system users.

A set of library commands allows a programmer to create the library, modify, list and otherwise maintain its contents. Librarian is now considerably faster. It can be used as a stand alone utility or as a set of procedures called by a user program.

MAIL

The Personal Mail Utility (MAIL) allows users to send messages to other users on their system or to users on any other VAX-11 computer linked to their system by DECnet-VAX. Users can also file, forward, delete, print, and reply to messages that other users send.

VAX Helps Your Fingers Do the Walking

"We leapfrogged a generation of computers when we chose VAX. The mainframe we were considering was only one jump ahead. By going straight to VAX, we advanced two steps in technology and avoided developing systems for interim hardware," says Joseph F. DiAngelo, President of Datacomp Corporation in Philadelphia.

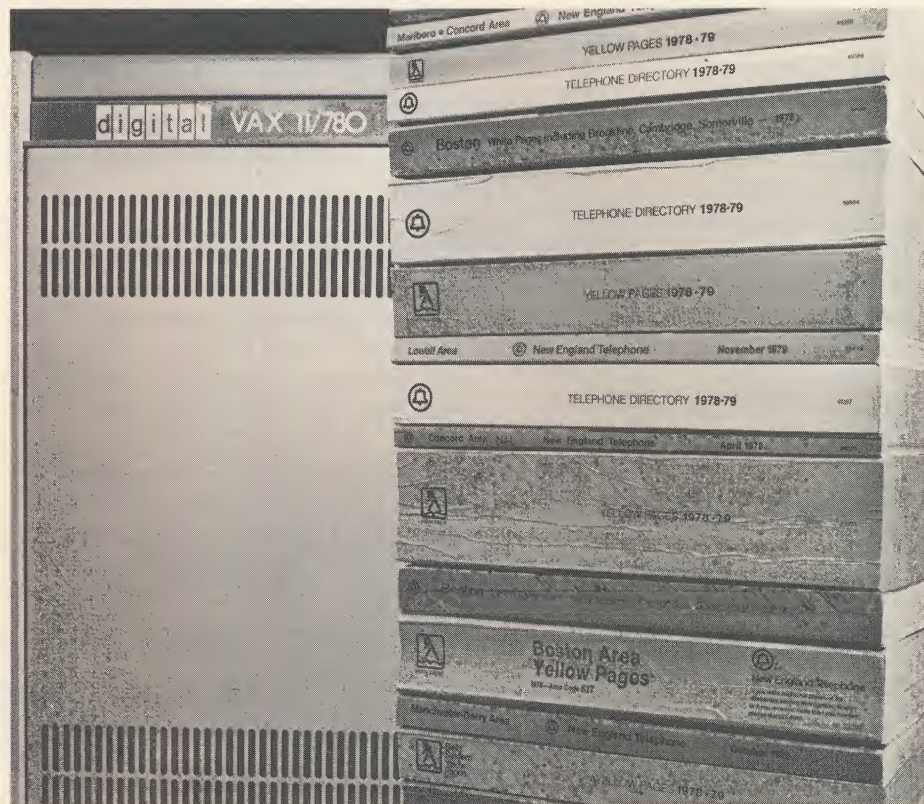
Datacomp, a division of Herbeck and Held Printing Company, is a nine-year-old company specializing in data management and computerized phototypesetting. Several of the 23 Bell Operating Telephone Companies rely on Datacomp for directory database management and phototype-setting. Datacomp also serves a variety of other firms that need sophisticated data management and phototype services.

Since Datacomp opened for business in 1971, the company has used a number of different computer configurations to support its information management and typesetting applications. Last year Datacomp conducted extensive research to find a system that could run a new yellow page updating application. The company was looking for a computer system with lots of memory and the ability to support many different peripheral devices, among other features.

Datacomp considered 16-bit and 32-bit systems from Hewlett-Packard, Perkin-Elmer, Data General, IBM, and UNIVAC, as well as Digital.

VAX won—and not just for the yellow page application. Datacomp will soon run all its applications, including white page, yellow page, administration, commercial word processing, and typesetting on VAX. The system's virtual memory, interactive capabilities, and potential for modular growth compared favorably to both larger and smaller systems considered by Datacomp.

The interest was mutual. Digital's Manufacturing, Distribution and Control Group identified Datacomp as an ideal prospect for the VAX-11/780—and as an exciting development situation for commercial applications dealing with high-volume database management and word processing.



Datacomp plans to use two VAX systems in a front-end/back-end configuration to run a combination of COBOL and FORTRAN programs to maintain and update the vast amounts of data in its white page directory work. (John Salidis, vice president of Systems at Datacomp, estimates the current number of records maintained is in excess of 21 million).

Eight more VAX systems are on order for installation in Datacomp's regional service offices, in Washington, D.C.; Boston, Cleveland, and Philadelphia. The front-end VAX receives directory update information directly from the Bell Companies' communication network. In addition to listening to the network link for eight hours a day, the front-end will also run accounting, and typesetting programs when the system is fully operative.

The back-end VAX, connected to its counterpart by Digital DECnet network software, will process the update transactions.

The configuration will also include a number of 176 Mb disk drives and 1600 bpi tape drives. The entire database will soon be disk-resident to provide random access capability.

Terminals tied to the VAX will be

capable of accessing any of up to eight million telephone directory listings, to perform a full variety of text-editing functions. It is anticipated that many of these terminals will be located in the telephone companies' offices, communicating with Datacomp's VAX.

Datacomp's yellow page application includes CRT screen formatting for the composition of display ads in all sizes, as well as file updating and photocomposition. Display ad data is entered into the VAX, edited on-line by Datacomp personnel using graphics terminals, and output for typesetting.

Datacomp's database/typesetting system can be adapted to any commercial typesetting job, and is especially suited to financial or business publications with a need for frequent and accurate updating. Datacomp's specialized typography software formats text and generates phototypeset paper or film positives, ready for standard printing press equipment.

Datacomp's approach to printing and publishing will eventually include complete word processing and editing functions through integration

(Continued on next page)

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| ☐ VAX-11 FORTRAN | ☐ DECnet-VAX |
| ☐ VAX-11 BASIC | ☐ DR780 Interface |
| ☐ VAX-11 CORAL 66 | ☐ TS11 Tape Drive |
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